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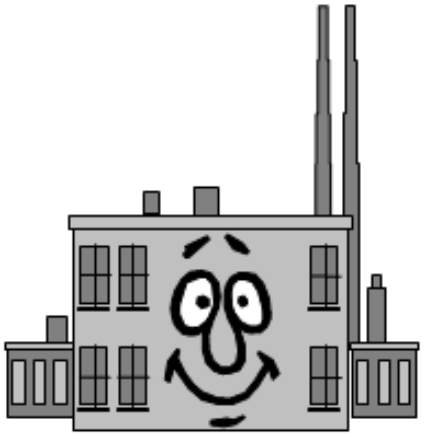

Lean Overview

Jim Odom
Breakthrough Strategies LLC

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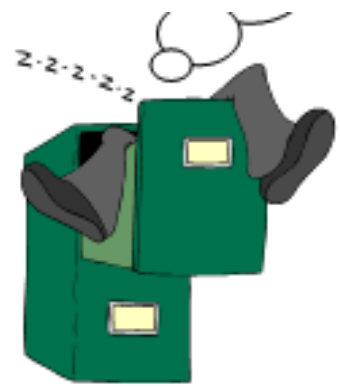
Lean Overview

- What is lean?
- History of lean
- Where are the Opportunities?
  - What are the Eight Forms of Waste?
- What are the Lean Techniques that I can Use?



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What is a Lean?

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- A Lean process is one in which:
  - Work flows on a continuous basis and is not a push or batch process
  - Systems are efficient and do not have inherent bottlenecks
  - All waste has been removed from the process
  - Balance of people, material, and equipment

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- A Concept Based on Fundamental Principles:
  - Value is defined by the customer
    - Value Stream Identified
  - All waste is eliminated
    - Value Steam has been improved so that only value adding steps remain
  - Information flows through the system
    - Single piece flow is the ultimate state
    - Information is pulled through the entire system
  - Continuous “Pursuit of Perfection”

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Lean Is Not An Absolute Condition

- There are no rules, only guidelines
- Lean varies by situation
- Lean means thinking
- Meeting the customer's requirements with the minimum amount of equipment, material, and people in the minimum amount of time and space.

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Other thoughts:

- Lean is not about applying the various tools and techniques
- Lean implementation requires a **strategy**
- Lean requires stable processes
- Use of rapid PDCA and KATA

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History of Lean

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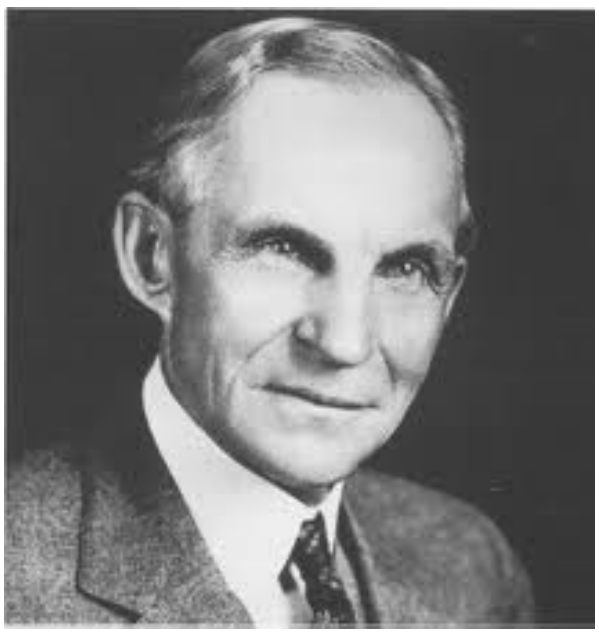
- Lean was developed by **Henry Ford**
- Further developed by **Toyota (TPS)**
- Influence of Taiichi Ohno & Shigeo Shingo



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Where are the Opportunities?

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Processes where lean applies:

- Manufacturing
- Customer orders
- Capital authorization requests
- Receivable invoices
- Payable invoices
- Insurance claims
- Medical records
- Payroll reports
- Social services

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Being able to identify and eliminate the eight forms of waste:

- Over-processing
- Waiting
- Motion
- Inventory
- Defects
- Over-production
- Transportation
- Information

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Over-production

- Production of service outputs or products beyond what is needed for immediate use.
- In an office, this is likely to be paper and information.
- Producing more than needed or producing it too soon does not improve efficiency.

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Waiting

- Any delay between when a process step/activity ends and the next step/activity begins.
- Waiting for anything – people, equipment or information – is waste.
- Waiting means idle time, that causes the workflow to stop. It adds no value to the product or service, and the customer certainly doesn't want to pay for it.

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Motion

- Any motion that is not necessary to the successful completion of an operation is waste.
- All motion should add value to the product or service for the customer.
- Ineffective job processes and layout are often responsible for creating more walking, reaching, or bending than are necessary.

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Inventory

- Any work-in-process (WIP) that's in excess of what is required to produce for the customer.
- Excess inventory takes up space, may impact safety, and can become obsolete if work requirements change.
- Unneeded material, files, extra suppliers, and unnecessary copies are some examples of inventory waste.

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Defects

- Any aspect of the service that does not conform to customer needs.
- Waste arising from producing defective work that needs to be redone or reworked.

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Over-processing

- Trying to add more value to a service/product than what your customers want or will pay for.
- The waste of over-processing often includes redundant activities such as checking someone else's work, obtaining multiple signatures, back-up paper files, or excessive reviews.

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Transportation

- Unnecessary movement of materials, products, or information.
- Transporting something farther than necessary, or temporarily locating, filing, stocking, stacking, or moving materials, people, information or paper, wastes time and energy.

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Information

- Too little
- Too much
- Inaccurate
- Wrong

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A Few Lean Techniques

- **5S**
- **Takt Time**
- **Pitch**
- **Buffer Resources**
- **Safety Resources**
- **Continuous Flow**
- **Standardized Work**
- **Supermarkets**
- **FIFO Lanes**
- **U-Shaped Work Area**
- **Kanban**
- **Value Stream Mapping**

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Value Stream Maps

- All the activities your organization must do to design, order, produce, and deliver its products and services to customers.
- A value stream has 3 main parts:
  - The flow of materials from receipt of suppliers to delivery to customers.
  - The transformation of raw materials into finished services.
  - The flow of information that supports the transformation.

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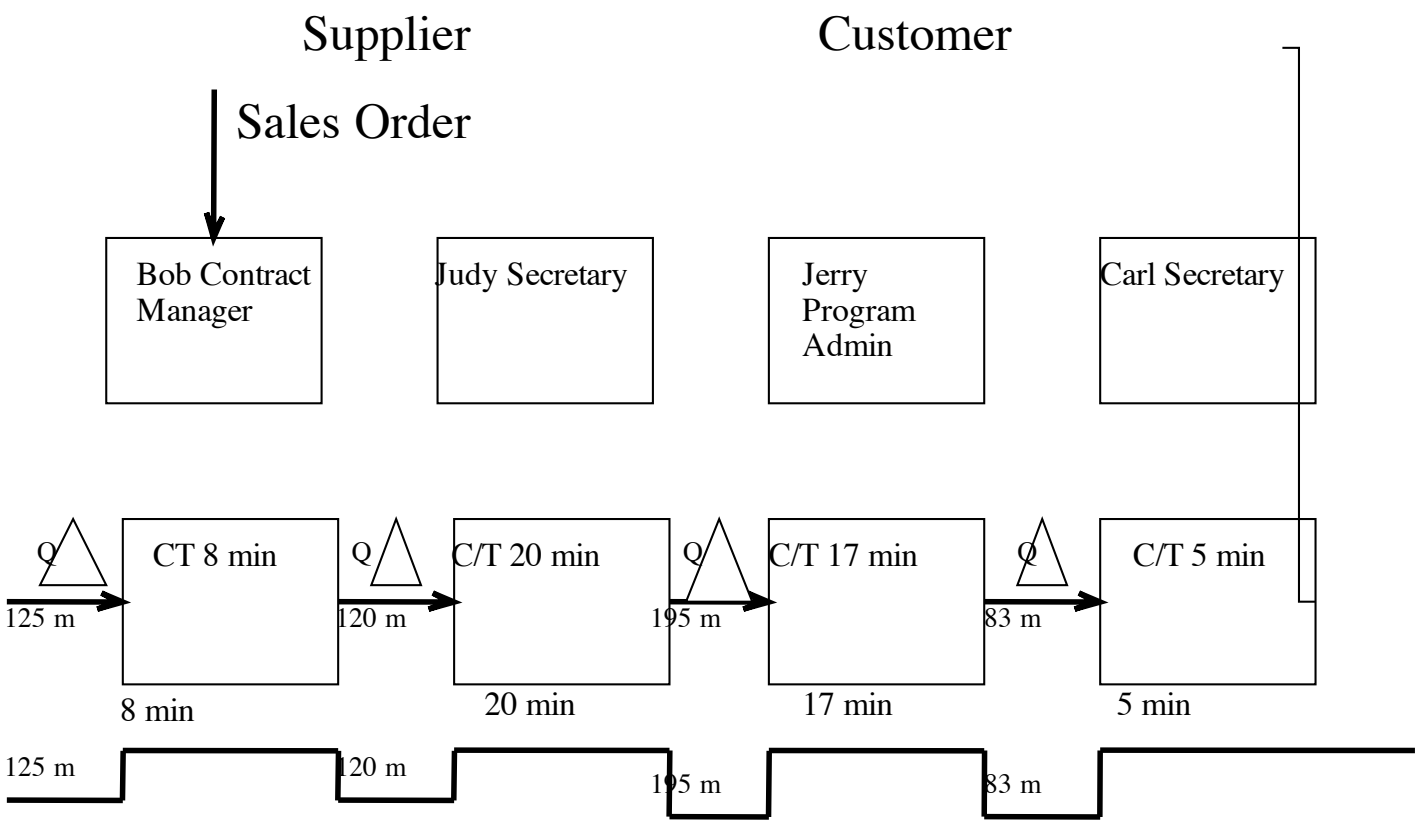

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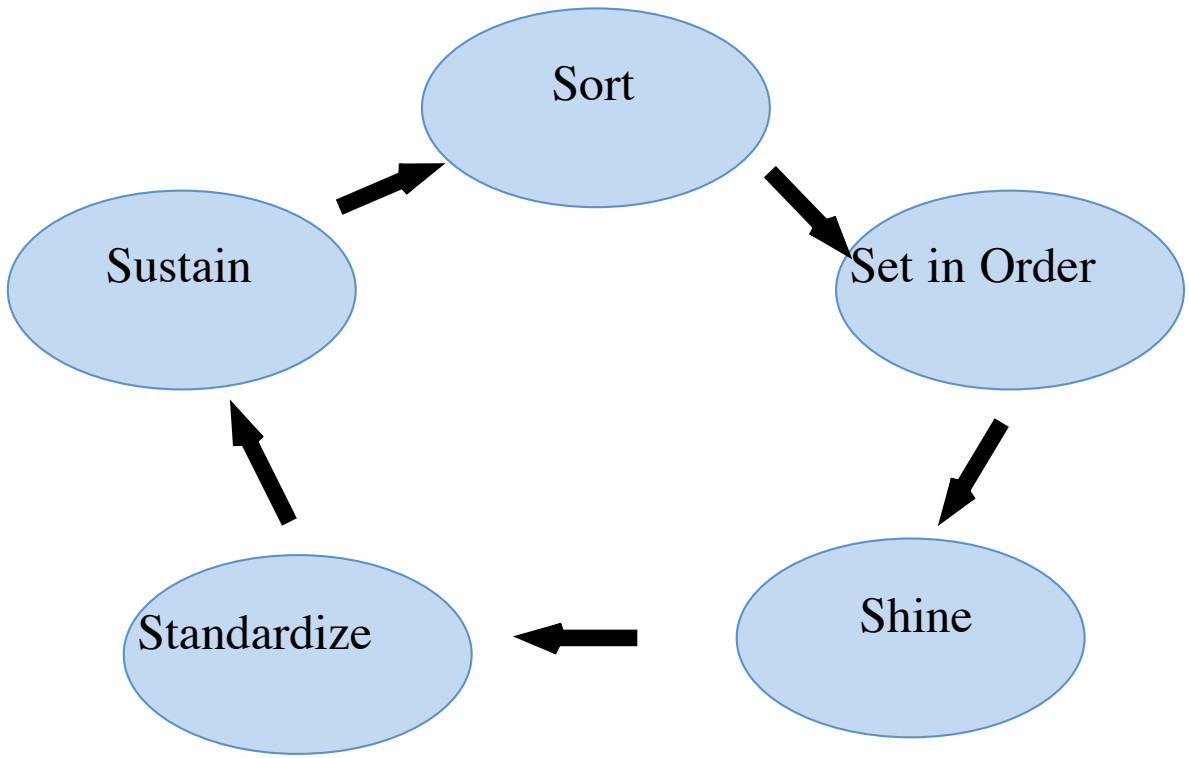
5S System



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- Sort involves sorting through the contents of an area and removing unnecessary items such as files, supplies, tools, equipment, books – including contents of drawers.
- Set-in-order involves arranging necessary items for easy and efficient access, and keeping them that way. This includes individual workstations as well as team work areas, meeting areas, mailrooms, and storage rooms.
- Shine involves cleaning everything, keeping it clean, and using cleaning as a way to ensure that your area and equipment are properly maintained.

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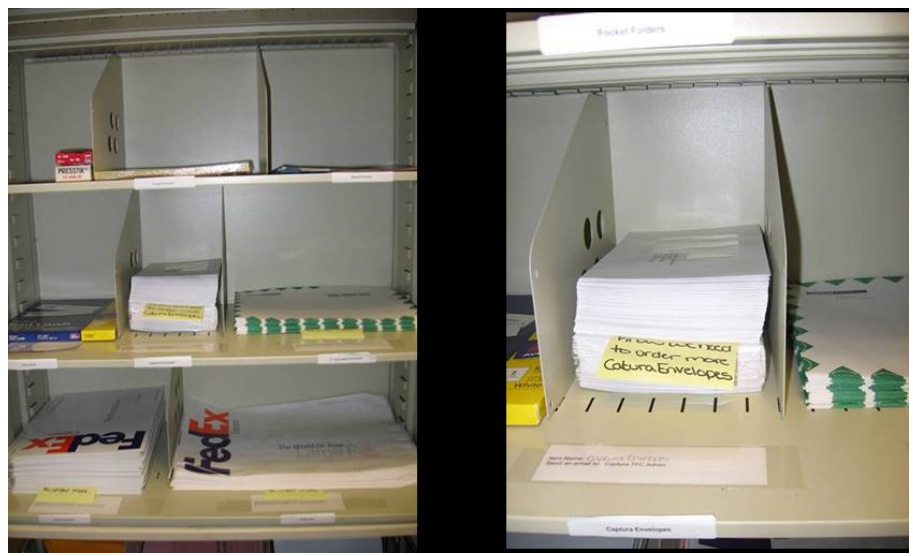
- Standardize involves creating guidelines for keeping the area organized, orderly, and clean, and making standards visual and obvious.
- Sustain involves education and communication to ensure that everyone follows the 5S standards.



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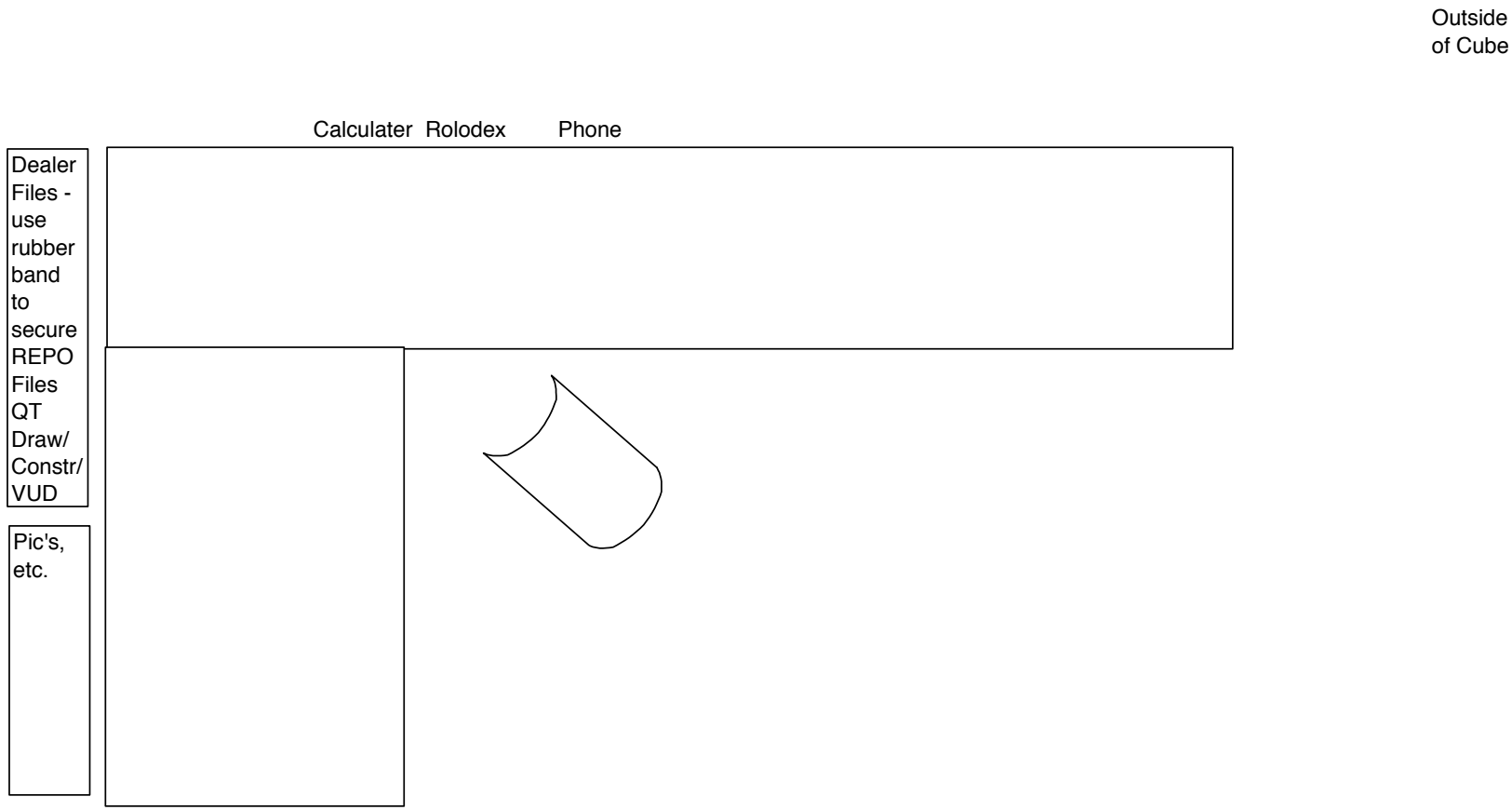
AM/AE CUBE LAYOUT



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Takt time

- Takt time is the pace of customer demand.
- Examples include:
  - An assembly produced every 60 seconds
  - Scheduling six patients every hour
  - An order entered every five minutes
  - An employment application filed every two days
  - A quote returned to the customer every five days

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Pitch

- Pitch is a multiple of takt time that will allow you to create, maintain, and sustain a consistent workflow throughout the value stream.

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Buffer resources

- Buffer resources are a means of meeting customer demand when customer ordering patterns, or takt times, vary.
- Buffer resources can include:
  - Overtime
  - Temporary workers
  - Retirees
  - Departmental borrowing

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Continuous flow

- Continuous flow means producing work according to three key principles:
  - Only what is needed
  - Just when it is needed
  - In the exact amount needed
- Advantages of continuous flow processes
  - Shorter lead times
  - Drastic reduction of work-in-process (and piles of paper on desks)

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Advantages of continuous flow processes (cont.)

- Drastic reduction of queue times
- Ability to identify problems and fix them earlier
- Reduced work unit and paper conveyance
- Reduced paper handling, and number of people handling
- Flexibility in meeting changes in customer demand (takt time)
- Less worker frustration

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Exercise:

Illustrate the difference between a process that flows and one that is a batch process

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Standardized work

- A set of work procedures that establishes the best method and sequence for each process.
- Creates an efficient workflow sequence that:
  - Maximizes variations in work procedures
  - Establishes the "best" practices to maintain quality
  - Provides for ease of training and cross-training
  - Ensures safety
  - Helps workers to meet customer demand

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Supermarkets

- A system used to store a set level of finished-goods inventory and replenish what is "pulled" to fulfill customer orders (internal and external. A supermarket is used when circumstances make it difficult to sustain continuous flow.
- Supermarkets are used when cycle time variations exist between processes.

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FIFO lanes

- In processes each job – every order, invoice, or request for a quote – is likely to be different. Every engineering design is unique. Every budget is different. And they have time requirements placed on them. For that reason, FIFO is a good practice to follow. Simply put, every job should be processed in the order that it enters the process, through FIFO.
- A FIFO lane is a process to control the flow of work along with visual indicators.

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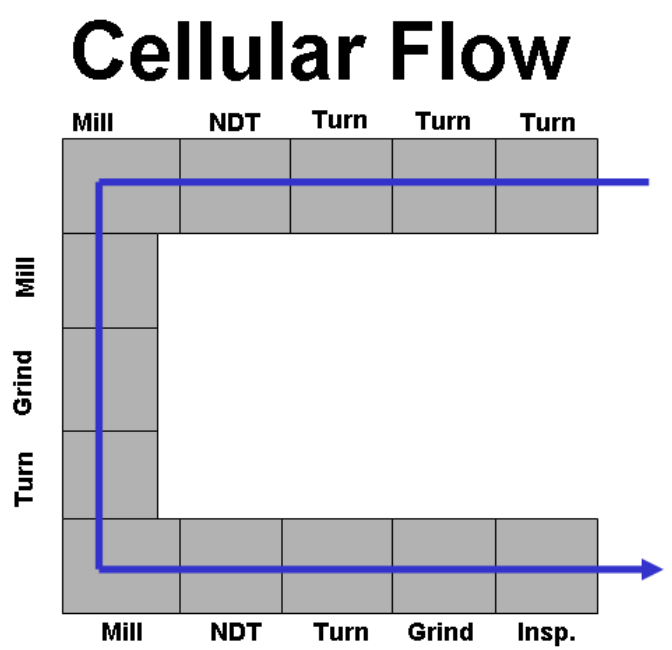
U-shaped work areas

– U-shaped work areas are the redesign of the physical work area in a way that will best accomplish standardized work.



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Kanban

- Kanban, a control card, is a system of communicating upstream precisely what is required in terms of work specifications and quantity at the time it is required.
- Kanban applies a form of visual control to the movement of work units. This information states the when, who, what, and how many.

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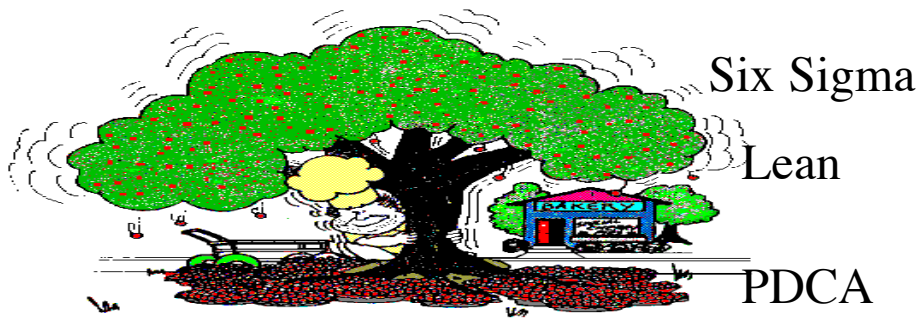
What process do I use to implement these techniques?

- DMAIC – Define, Measure, Analyze, Improve, Control
- Kaizen events – One or two day implementation
- PDCA – Plan, Do, Check, Act



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